(b) (6), (b) (2) [redacted]

Naval Facilities Engineering Command

Discovery Sprint Report

October 7-11, 2019

(b) (6) [redacted]

Summary

At the request of the Commander of Naval Facilities Engineering Command (Rear Admiral John Korka, NAVFAC), as well as the NAVFAC CIO (Mr. Rob Baker) and Deputy Operations Officer (b) (6) [redacted], the Defense Digital Service (DDS) sent a team to two Public Works Department (PWD) locations in Hampton Roads, VA during the week of 7-11 October 2019 to conduct a Discovery Sprint. The goal of the Discovery Sprint was to quickly explore and isolate challenges in the command's tools and processes related to PWD workflow management. This aligns with NAVFAC's goal to "*develop a fully integrated, interoperable work management system for Public Works Departments*" as part of the Strategic Design 2.0 initiative.

This report details the findings and recommendations for solving the root causes contributing to the inefficiencies in workflow, visibility of workload, and limited availability of verification of expenditure data. While some recommendations involve significant overhaul, engineering effort, and evaluation/replacement of existing systems, many of these recommendations could be staffed through the creation of a Rapid Delivery Team (RDT), which is a small, focused, vertically integrated team reporting to a senior leader advocate. The four key areas of concern are summarized below. The Findings and Recommendations section of the report is organized around these four areas.

1. Workflow Management: **NAVFAC does not have a workflow management system**. A workflow management system would support functionality such as queuing, task ordering, automation, data auto-population, and transparency of status to both users and customers in a unified platform, none of which exists across the suite of NAVFAC systems. While NAVFAC has a suite of various systems, tools, and procedures employed to conduct facility management tasks, services, and deliverables, the implementation is a nest of disparate processes supported by legacy tools dating back 20 years. The result is not a true workflow management system as users cannot track a single project from start to finish in one unified system. (b) (2) [redacted]

2. Software Development Team: **Consistency in systems is stifled by lack of a dedicated development team.** The internal software teams are lacking dedicated resources. Across all the teams, no individual is 100% focused on any tool. It is apparent that workload to research, design, maintain, sustain, and develop new capabilities is hindered by lack of staffing. Additionally, the software teams are not empowered or positioned to develop, deploy, and maintain systems with modern industry best practices (e.g., DevSecOps, user experience (UX), cloud).

3. Contracting and Budgeting: **Contracting inefficiencies are impeding throughput.** The process for making purchases over $2,500 needs to be revisited for those actions that require quick turnaround to make repairs. Difficult contracting processes lead to delayed (and uncertain) project timelines and customer experience. Other levels of required contracting actions adds an additional 6-10 weeks on projects. This is coupled with personnel frustrations as well as poor customer satisfaction.

4. Ownership of the Workflow: **NAVFAC does not have a true owner/champion of the process from end-to-end.** Ineffective organizational ownership of the workflow management process and its underlying system has led to over-customization of tools. Additionally, the refusal to use one unified system in favor of two systems based on user location and history of the organization prevents a fully integrated workflow process across teams. This is exacerbated by one-off solutions geared towards specific users/sites. Ultimately, the array of non-integrated systems, requirements for extraneous data requests and tasks create a highly complex system that makes it almost impossible to have a metric driven workflow, let alone effectively completing tasks or providing any useful visibility of workload.

Background

NAVFAC executes approximately $14 billion of public works projects every fiscal year. The projects range from fixing minor building infrastructure via "Service Calls" to engaging in massive shore infrastructure "Projects" which involve specifying, design, bidding, and construction (e.g., new facilities, major renovations, as well as base road maintenance). The NAVFAC ecosystem includes:

- 71 Navy PWDs and Facility Engineering Acquisition Divisions (FEAD)
- 24 Marine Corps FEADs
- 9 Army/Air Force Construction offices that manage NAVFAC's project workload.

In 2005-2006, NAVFAC consolidated the former Public Works Centers (PWCs) and Engineering Field Division (EFDs) into a single organization for the delivery of facilities solutions as part of the overall Navy. This also established Commander, Naval Installations Command (CNIC) as the Navy Shore Owner. PWC used Maximo for tracking service calls (Emergency, Urgent, and Routine) and EFDs used ieFACMAN for projects. This began the discussion of how to have a

single view of all the work being delivered as these two groups merged into the current PWD structure.

NAVFAC has engaged in at least three different efforts that have attempted to address the shortcomings of the workflow management systems (Maximo and ieFACMAN):

1. **PWD Integrated Product Team (IPT) Focus Team (PIFT)** (2008-2010). The efforts of this team led to the Integrated Workload Management Report (iWMR). After 2 years, the framework of connecting records between the systems was abandoned as it was not clearly understood or reconciled.
2. **eApps Integration (EAI) Cross Functional Team** (2012-2013). This effort led to the issuance of Network Operations (NETOPS) #28 which addressed how NAVFAC would provide consistent labels and terms across both Maximo and interoperable enterprise Facilities Management (ieFACMAN) systems to standardize workload.
3. **PS2.B Working Group** (Q1 FY19 - present). Due to the inability for a PWD to easily view their workload, the recommendation was to "prototype" eNdeavor as the mechanism to provide stakeholders a single tool to view project data across different systems (Maximo, eProjects, and eContracts).

These efforts indicate that NAVFAC identified some of the problems years ago, which is encouraging and demonstrates a desire to improve current processes. Unfortunately, the successes in remedying these issues have been limited. In the meantime, these delays and failures in consolidating tools, data, and processes continue to impact personnel morale/turnover, and training demands (on-the-job or otherwise). Most importantly, the use of multiple systems to manage the construction and management of facilities makes it almost impossible to accurately determine costs, spending rates, and areas where efficiencies can be gained.

Lastly, a recent survey was conducted to understand the pain points in the workflow management system. See Appendix A for a summary of those results as provided to the DDS Discovery Sprint team by NAVFAC.

Methodology

DDS sent a Discovery Sprint Team representing Product Management, Procurement, Design, and Engineering to understand the processes, technology, and culture onsite at PWDs located at Joint Expeditionary Base Little Creek - Fort Story (JEBLCFS) as well as Norfolk Naval Shipyard (NNSY). Additionally, the team met with the Patuxent River PWD to discuss their process and implementation for the Base Operating Services (BOS) contract model as a comparison. During the site visits, the sprint team conducted a series of interviews with NAVFAC teams across the major divisions of work to observe, research, and dive into all aspects of the PWD workflow. This included how tasks, services, and deliverables were scoped, tasked, tracked, and completed by PWD personnel. The team also spent time with the

ieFACMAN and Maximo software teams to understand their engineering processes, the capabilities of the tools, and the way that infrastructure and code development cycles were implemented.

Due to the various discussions that led to understanding the workflow currently in place, the team generated a high level journey (process) map as presented in Appendix B. The artifact serves as a baseline for discussion as it relates to the findings and recommendations throughout this report.

Rapid Delivery Team (RDT)

One of the systemic issues revealed during the interviews was that the teams responsible for building and maintaining the systems were not focused on a single product. Due to this compounded lack of true product ownership, the overarching recommendation is that NAVFAC create a dedicated team comprised of engineering, acquisition/procurement, and design to be led by a strong product advocate that is given autonomy of owning and shepherding the process in the right direction. This RDT's mission would be to quickly research, evaluate, and deliver effective, documented, and operationally tested systems and services that benefits the overall workflow management system for NAVFAC PWDs. For this team to be successful, they must be provided with complete top cover and authority from leadership at the highest level and must be isolated from day-to-day tasks so they can function and perform in order to effectively and quickly execute the challenges at hand. With these criteria in place, the RDT would become the model for future development and delivery approaches within NAVFAC, which operates as a traditional organization where building software in quick/effective manners has always been met with challenges.

The RDT ideally should act as an "incubator" and have control over RDT resources and decision authority over external resources under RDT oversight. NAVFAC should provide the RDT with unrestricted access to support team members covering procurement, security, legal, and administrative functions necessary to accomplish its mission. The RDT would use the detailed findings and recommendations within this report to perform a deeper evaluation of the systems and processes in order to *quickly* implement the changes required.

More specifically the RDT should initially focus on:

1. **Improving the workflow management system** by establishing a deep level review of workflow process to:
    a. Remove useless or redundant steps and data hurdles.
    b. Separate ieFACMAN and Maximo workflows and use cases.
    c. Specify how to properly use current systems or recommend alternatives.

2. **Increasing system stability, reliability, and disaster recovery** by moving existing systems, if RDT findings support it, to the cloud such as:
    a. Maximo, being a COTS product, should lend itself easily.
    b. ieFACMAN, which could be a candidate as well.

3. **Establishing a true Product Owner** focused on:
    a. Decision immediacy with respect to the software and tech for workflow management.
    b. Maintaining consistency across PWD sites through standardizing the process.
    c. Making decisions based on task and user needs, not leadership asks.

Findings and Recommendations

Workflow Management

NAVFAC relies on stove-piped and disparate systems, offline files, systems that are not available across multiple platforms, and procedures that are unique per site. Users are unable to track the progress of a project from cradle to grave under the current implementation of available tools. This leads NAVFAC to have unreliable and insufficient insight into current workload, execution, and future prioritization of projects. With the goal of building a fully integrated, interoperable workflow management system, NAVFAC should build the technology to be extensible enough to solve the issues today, and grow as the process changes without having to bolt on new components to solve things.

Decide on whether to properly invest in and implement what NAVFAC currently has or replace/overhaul the entire system.
An objective review of NAVFAC's processes and technology should be conducted. There is a critical decision that needs to be made in creating an integrated workflow management system: 1) continue by improving existing systems (Maximo + ieFACMAN), or 2) overhaul the current ecosystem and implement a new workflow management system. Regardless of the path, NAVFAC must evaluate if any of the current systems can be adapted to remove/replace any of the ancillary services that have been created. NAVFAC should determine what are the true yearly expenditures for the current systems including infrastructure and development. Understanding the current costs versus the costs of changes will be informative. This data will be critical to weighing the below options, timelines, and potential transitions. While the cost described above is one data point, the costs associated with workflow inefficiencies should also be considered, even if more difficult to calculate.

1. **Implement proper workflow management in current systems, if possible.**

Implementing workflow automation and queueing in both Maximo and ieFACMAN would dramatically increase efficiencies. There are numerous obvious quick-wins in this realm. One would be to remove the sub-system titles (various e-systems) and truly integrate as one system workflow under ieFACMAN for the "project" workflows. Another is to force any and all project work to go through a master project designation first (versus requiring "projects" to start in Maximo or e-Projects first). This allows all of the follow-on project steps (i.e., other Product and Service deliverables) to only be started within a master project. eNdeavor is not a sufficient mitigator of this issue.

Additionally, existing tools are more capable than currently implemented. For example, only 50% of Maximo's features are used (as cited by the Maximo team). Critical functionality like workflow management, schedule dependencies, maps/stages, and document attachments are not used. NAVFAC needs to evaluate the processes and present a proof-of-concept to determine if Maximo can confidently provide all the services needed throughout the organization. As part of the research process, NAVFAC should visit commercial sites that use 100% of Maximo (e.g., Disney, universities, etc.).

- One critical point is to remove the overlap between Maximo and ieFACMAN. There are logical scenarios where Maximo and ieFACMAN can coexist even though current implementation is overlapping. Maximo should be reserved for Shops work/service calls only and ieFACMAN for project work only. Do not require any Service Request (SR) fields to be generated in Maximo as a starting process for an e-Project record, nor should CNIC Integrated Priority List (IPL) be started or housed in Maximo. While this would solve only a small portion of the overall problem, it at least designates a cleaner workflow path.

2. **Conduct market research on commercial replacements and pilot initiatives.** The long-term fix is to have one tool (or certainly a minimal set of tools) that can cleanly organize and maintain service calls, contracted projects, and Shops projects. NAVFAC should consider a more robust market research evaluation to include exploring Customer Relationship Management (CRM) tools such as Salesforce for ticketing (and more), workflow platforms like ServiceNow, and various others to replace Maximo and all components of ieFACMAN. Also, it was noted that Army Corps of Engineers uses a commercial solution called GFEBS-A tool as a workflow management tool. Additional research into that tool is needed to determine if it is useful or has its own set of equivalent limitations. As replacement solutions are deemed possible, NAVFAC should consider piloting replacements for feasibility as well as to minimize any roll-out and transition difficulties.

Implement a Master Project View - eNdeavor is not the solution.

There currently is no single source of truth about a project ("Master Project"). Each department creates a separate "project" record for each Product and Service (P&S) deliverable without having to relate it to an overall master project. This creates confusion and is one of the main

offenders towards not having a holistic view of the project. This makes finding status of a project quite difficult (requires multiple queries and hoping the notes sections in each e-Project task were cross-referenced). This led NNSY PWD to create the "Megamap" spreadsheet that requires a significant manual lift to do what ieFACMAN should already be doing. While eNdeavor was recently developed to attempt to solve this problem (yet to be released and only includes a slice of the originally specified functionality), eNdeavor is too late and is yet another add-on-tool that confuses the workflow. Additionally, the ability of eNdeavor to create a master project is still dependent on all of the other P&S data being cross-referenced. Instead of forcing a master project creation as the beginning funnel for any P&S related work, eNdeavor is really just a reporting tool that only works if everyone takes the extra steps to cross-reference and map back to a master project. Workflow is unchanged and the goal of creating master projects is unlikely to become the standard. NAVFAC should not deploy the initial version of eNdeavor. There are fundamental feature discussions and prototyping with users that are needed to better develop the appropriate workflow for creating and maintaining master project views.

(b) (2)

(b) (2)

Lessen data/metrics burden on the user.

NAVFAC HQ's need for visibility into additional levels of PWD data/metrics is currently coming at the expense of an efficient workflow. Initiatives like "The Kilo-Gram", which may have had the best intentions of improving data entry, are viewed as a burden of additional steps for users to accommodate. The Kilo-Gram was released in March 2019 with the requirement for commands to fill out a bi-weekly progress report (or scorecard). Cleaning up erroneous data while improving workflow is an important goal, but the bi-weekly scorecards and extra/new data entry requirements have been received poorly at the PWD level. In fact, users are being driven to take less efficient routes or add random data to accomplish work or to avoid being marked as delinquent or unresponsive. If metrics derived from the data are deemed necessary, the tools and current systems should be evaluated and improved to minimize burden on the UX and workflow efficiencies not just to report data. If metrics are being gamed, they are not good metrics. NAVFAC should always strive to get useful data and metrics, but the balance between adding more data entry on the user vice improving workflow should be carefully sought.

(b) (2)

Interconnect systems to improve data transfer.

The current ecosystem of tools requires the shuffling of paperwork between PWD divisions (and sometimes elsewhere), multiple points of entry of the same data into multiple e-systems, and manually recording data to re-enter into a system at a later time. For example, Maximo data entry does not auto-populate data that is known from internet Navy Facilities Asset Data Store (iNFADS) or within Maximo already. NAVFAC should re-evaluate the data entry process with users, highlight all of the pain points and work toward smart data entry and consolidation as a means to gain efficiencies. Data that is known or learned by other interfacing apps as well as already with in an app (whether Maximo or ieFACMAN) should be exposed for users.

Reports that matter. Reports that are efficient.

One individual we interviewed stated, "Getting any changes or new reports from the various e-systems is hard and too long. So people give up." Across all the tools, there was a universal

frustration with pulling reports for necessary data. Generating reports is creating additional workload, whether it was due to excessive time to create/download a report or the manual time it took the user to organize the data into something useful. As such, reports were observed as an inefficient part of the process. Cognos was implemented to try to eliminate much of this, but due to poor implementation, it's considered a stop gap as it does not solve the insufficient reports inherent to each tool. NAVFAC should evaluate the format of reports, the speed and ease of getting those reports, and the amount of time users spend in compensating for system report issues. NAVFAC should take action to enable users to better create the reports they need, standardize reports for roles where possible, and share report templates with ease.

Reduce the manual workload of the Work Permit process.
The Work Permit process, which involves customers requesting approval to conduct their own maintenance (e.g., painting, replacing carpets), requires PWD review and approval. At this point, it is another add-on manual process. While it was not noted as a demanding workload, it did appear to be another standalone/collateral duty with "untracked" data. NAVFAC should account for and integrate the "work permit" process into the overall PWD workflow management. While it is not a significant part of the Field Maintenance Specialist's (FMS) workload, there are a series of signatures and reviews by FMS. Additionally, the completed work permits are currently tracked on locally stored spreadsheets. There is an opportunity to not only improve efficiency for FMS and Program Analyst (PA) workloads, but to also expose additional data to NAVFAC on maintenance conducted by customer.

Software Development Team

The internal software teams lack dedicated resources. **Not one person is 100% on any tool**. It is apparent that the effort to maintain, sustain, and develop new capabilities is hindered by lack of staffing. Software development internal to NAVFAC is based on antiquated government waterfall plus layers of Change Control Boards (CCBs) (one for each Maximo and ieFACMAN) and layers of Working Group approvals. Anyone associated with a tool/system on the development and sustainment side is only part-time.

Staffing

Staff appropriately across the right disciplines.
NAVFAC should hire and empower an appropriately staffed software development team for PWD workflow management tools. These teams should be the primary developer, sustainer, and maintainer of internal NAVFAC PWD tools. Members of each software development team should possess senior-level work experience in their disciplines with established histories working on highly complex software systems and/or legacy code bases. Ideal candidates for these roles would possess a set of skills that cross-cut multiple disciplines. Ultimately, NAVFAC should also develop a proposal/plan for quick and responsive software release cycles, automated infrastructure configurations, continuous integration (CI), and continuous (or at least

automated) delivery (as part of DevSecOps), and thus instantiate modern software development best practices.

Hire and empower a UX team.
User engagement, research, feedback, and design should be fostered, not buried, minimized, or stifled. A UX team should be included in the staffing and empowered as part of the software development team. Given that PWD personnel are likely to only have (or expected to only have) a basic level of computer skills, the importance of designing a "walk up and use" user experience in the tools is critical. Complexity in NAVFAC processes and business is inherent, but the user experience does not need to be complicated. Often this results in the system being modified for each particular Facilities Engineering Command (FEC) or PWD (over-customization for everyone).

Design Process

Empathise with users and protect user experience.
The user roles/titles across the PWDs appear to be standardized in terms of general responsibilities. This does provide for useful discussions about various tasks in the workflow as understood and perceived. But, in several conversations, there lacked an empathy for users' frustrations and daily pain points. As such, this was reflected as no one advocating for or protecting users and their experience. There is a User Group and even a CCB (one for each Maximo and ieFACMAN) that takes input from the User Group, but neither are empowered to resolve the multitudes of UX pain points. The pain points of each and every user in using the tools and managing a workflow is either excused or justified as complicated due to necessity, therefore, sufficiently addressed as possible. NAVFAC HQ and associated business lines should conduct field trips to meet with, talk to, and observe users. Additionally, NAVFAC personnel that have some responsibility to PWD implementation of a given to the tool should all be required to understand most of the tool and have used it oneself. Lastly, after spending more routine time with users, the right/empowered group (e.g., UX team) should develop user descriptions/profiles (i.e., personas) as an artifact to reflect the roles, responsibilities, and tasks for each user/role. Understand the needs of the user in order to build the proper systems.

Conduct critical user research prior to piloting new technology.
Over the last few years, NAVFAC has piloted some new hardware and mobile technologies to improve data entry and workflow. This includes tablets (four years ago) and iPhones (in January 2019) to test out the mobile app MaximoAnywhere. After talking to the users who participated in those pilots, the use of the technology was a failure. Better market research, pre-pilot testing, and user research could have resulted in the same findings found with the piloted technology (i.e., app was slow, poor signals available, app difficult to use, limited offline use). Even after these insights, the full scale of iPhones had already been purchased, so the command is proceeding with deploying with these known issues. There is no shortage of useful technologies for NAVFAC to explore to improve workflow and data entry, but it is clear that a UX research team was not involved in identifying pilot tech opportunities, conducting user research prior, or

observing and reporting on user experiences during the pilot phase. NAVFAC must conduct better research to solve the obvious problems before new tech rollout as well as conduct proper research and observation during the pilot execution.

(b) (2)

Infrastructure

Improve network speed and load times.
Regardless of the user, role, location, or systems they were required to access, all users complained of tools being too slow, timing out, and requiring long periods of waiting for downloads. It appeared that everyone just accepted this reality that NAVFAC Information Technology Center (NITC), Navy Marine Corps Intranet (NMCI), and local infrastructure provided. Some users noted that establishing a VPN while teleworking did dramatically improve performance. NAVFAC needs to elevate the impact of this issue to a series of actions. While there are some factors outside to NAVFAC (e.g., NMCI networks and machines) that are contributors to this problem, there are some direct changes that NAVFAC can implement. For one, NITC, as operating under NAVFAC, should evaluate how they prioritize network activity for these tools, and ensure there is adequate bandwidth provided in/out of the data centers as well as to each facility.

Additionally, there was no clear reason why NAVFAC tools need to be hosted on the NMCI networks. They are accessible over a public network, as seen with the tablet apps, with Common Access Card (CAC) authentication. Therefore, these systems could, and should, be moved to the cloud. Moving to the cloud will not only increase the network performance, but will provide the opportunity for many of the other improvements called out around the infrastructure concerns. Networks will never be fast enough and NIPR machines will generally be inadequate, but user frustrations and wasted time, as indicated by negative nicknames (e.g., "Maxislow"), should be mitigated as a priority.

Provide sufficient online storage for data and records.
The e-systems and tools are not currently used as the repository of definitive info, data, and sources for a given project. Certainly some files are attached to a given task, service, deliverable, or record, but more than not, files are stored in other repositories, shared drives, or SharePoints. In the instance of local shared drives, users noted that they have depleted available storage and resort to local machine storage of some project files. This could be critical or relevant info for an ongoing project or just of historical/archival importance. One solution is to increase the amount of shared drive storage, which does provide a PWD with options to manage a variety of share documents and history. But, most importantly, it was discussed that many of the systems either do not make it easy to attach relevant files (e.g., drawings, signed documents, specifications, pictures, or performance assessments) or there were limitations within the system to do so. In evolving to a true workflow management system, NAVFAC must move away from over-reliance on local machine storage and limited shared drives. Build the systems and tools to accommodate all the necessary records and data for in-process work as well as after completion.

Move NAVFAC tool architectures to the cloud.
Maximo and ieFACMAN server architectures are vulnerable to catastrophic loss. They are running in a datacenter that has proven reliability issues, as well as not having infrastructures that are easily recreated in the event they need to be geographically moved. NAVFAC should (b) (2) first lift and shift Maximo to the cloud. Based on feedback from the team that supports that system, a basic rebuild should take a week. The overall rebuild should take a few weeks after the initial provisioning of the environment occurs. Once the port is complete, the team can then focus on automating the deployment so they can rebuild within hours as opposed to days. Moving to the cloud will provide NAVFAC with a series of tools out of the box (backup, provisioning, and monitoring) in addition to much better network reliability that anything that is currently in place at the NMCI facility.

Contracting and Budgeting

Given the type and amount of services that are procured via contracts, there is a need to reassess the methods used and tools in place. Identifying ways to streamline the procurement of requirements that are above the Government Purchase Card (GPC) limit would help address the problem of slow responses to the immediate needs of the customers. How the workforce engages with the tools provided affects how services are procured and administered, as well as the data that can be used to inform future procurements.

Procurement card limit forces many projects to contracts.
Emergency and minor construction improvements (i.e., roof repair) are above the GPC limit of $2,500, therefore forcing these projects to contracts, which adds more administrative time and as much as 6-10 weeks to the project because of the procurement cycle. Although this is tied to the established GPC rules for construction projects, NAVFAC could utilize Purchase Orders and establish indefinite delivery indefinite quantity contracts (IDIQs) to facilitate quicker acquisition of projects under $25,000. A streamlined approach to procuring services is recommended to reduce the procurement timeline and meet users needs.

Identify bid bust early to prevent waste.
Based on historical contract pricing and expertise on current market rates, program managers and the acquisitions directorate should use that information as the basis for estimating contract value to decrease bid busts. Currently, some program managers base their estimates on outdated data because of NAVFAC standard operating procedures. Current historical estimating model only accounts for what it was awarded. This prevents them from including market fluctuations that will get to a more accurate estimate. Bid bust is at least 50% above the independent government estimate (IGE). Bid busts present an uncovered cost for NAVFAC because of the excess work in design and contracting that NAVFAC does for projects that never get implemented. There are also uncovered costs associated with acquisitions. NAVFAC should create earlier bid bust anticipation triggers so Acquisition in FEAD can eliminate wasted time.

The extent that the issue of bid bust exists across all the PWDs or only in certain PWDs was not determined by this Discovery Sprint.

Improve BOS contracts to facilitate better transfer of third-party data.
Current status of services and projects at each PWD is a challenge, but an additional issue is presented to those PWDs that use BOS contracts. The contractor involved in executing the services (service calls or projects) is allowed by contract to use their system/tool of choice to track, manage, and log data regarding work execution. It was noted that getting real-time status from contractors is a challenge. Even if the BOS contractor uses Maximo (their own instance), exchanging real-time data for status of service calls is not possible. Regardless of the system they use, a flat file is the method used to pass data to the PWD. This transfer is only conducted periodically and has limitations on the data fields in the first place. NAVFAC should evaluate the need to provide BOS contractors with direct entry capability to the NAVAC instance of Maximo where appropriate. But, more importantly, NAVFAC should either require more specific data from BOS contractors or develop a series of interfaces/exchanges that allow for better real-time data sharing.

Re-evaluate the utility of the enterprise Content Management Software (eCMS).
After years of discussion, NAVFAC purchased their first cloud-based application called eCMS and implemented in 2016 ($5 million / year). Recently, due to a security vulnerability, eCMS was pulled offline. Not only is the system currently not available for NAVAFC use, but NAVFAC is only using a limited portion of eCMS (mostly for document control of post-award contracts). The tool also offers dashboards, workflow, and some additional content management capabilities. No one was able to clearly articulate why this additional system is really needed or how it makes any process easier. As such, it becomes yet another tool that personnel have to access and use for a limited set of functions that are not integrated into the standard "core" set of tools workflow. Considering eCMS has been down, no one was complaining about it being currently offline, and it has limited value to the workflow, NAVFAC should cancel eCMS and utilize existing tools (either within ieFACMAN or SPS/PD2) for post-award contract storage. (b) (2)

Ownership of the Workflow

It's clear that NAVFAC has a complicated business with varying customers, priorities, and budgets to align with national defense. These elements contribute to an inherently busy workflow that is already hard to manage, and even moreso, with the inefficiencies of the legacy tools in place. The main systems, Maximo and ieFACMAN, are managed by a set of CCBs. These are staffed by individuals that have a multitude of other primary responsibilities. It is likely that the actual CCBs are faced with a steady stream of divergent user or site specific requests for system changes as well as weekly/monthly process reviews that only further disassociate the CCB decision-makers from the tools themselves. The CCB personnel may not have recent experience or detailed workflow knowledge of the systems they are serving. Lastly, multiple business lines are engaged with perceived and actual unique requirements of the systems and

associated data. All of these factors combine to highlight the lack of product owner to oversee and manage the workflow management system. Many of the recommendations, as stated previously will not be successful without this individual being identified and empowered.

(b) (2) [redacted]

Own and Decide

Establish an organic technical product owner.
There is no central owner of the PWD workflow. Neither the CCBs nor the business lines serve as the single source for owning the workflow management system. User Groups do appear to gather feedback from sites and then the CCB evaluates these concerns as they may impact all sites and up through the NAVFAC reporting level. But, this non-throttled approach to establishing a process and building a system around it has led to over customization and the creation of complicated tool infrastructure and user experience. As such, NAVFAC should establish a Product Owner (Product Manager or Product Lead) with the right skills/knowledge and agility to react, consolidate, and implement quickly. The Product Owner would be responsible for standardizing the workflow, consolidate existing tool functions and tasks as opposed to tacking on new systems/data fields to further complicate the workflow. At this point, if a change/feature does not improve the workflow, it should not be done.

Implement decision immediacy when users depend on system availability.
Due to end of fiscal year changeovers and NAVFAC proceeding to a new funding model, Maximo was taken offline for 10+ days (at least for the MIDLANT FEC). The PWDs anticipated a few day outage and pre-staged (printed) a queue of service calls. Any outage that takes a system offline for more than a few hours is unsatisfactory. The Discovery Sprint team observed the work stoppage that resulted from Maximo being unavailable. After meeting with the software team, it was learned that the outage was due to not receiving a decision on financial field coding. Some FECs did assume the risk, implemented a best "guess" for the new financial field coding and returned Maximo to operational in a much shorter period. NAVFAC should enable and empower quicker decisions. Downstream effects of simple coding/field decisions hinders entire workforce at PWDs for days.

Document, standardize, and manage the workflow management system.
NAVFAC has built a system of add-on systems resulting from short-term fixes for various pain points without actually doing a holistic analysis of the overall workflow. Many of these add-ons and/or customizations over the years have been driven by either site specific requests or NAVFAC leadership's requests for additional data/metrics. In reality, the PWDs conduct their work through a convoluted series of systems modeled around legacy processes, often time specific per site, for logging data and tracking data points. As such, not only is the UX and efficiency compromised, but there is a lack of visibility into the true status of a project at any given stage for all stakeholders (i.e., workflow users, Headquarters, and customers).

NAVFAC should create the ground truth of the current workflow and process. There are existing views that were shared with the team, but none correctly reflected the unique paths or inherent

multi-path situations between Maximo and ieFACMAN. After creating the current process map, a clearly empowered group needs to own that workflow and be responsible for managing towards an integrated workflow management system. In owning and managing this workflow, this group (at every turn) would make decisions that consolidate, reduce, standardize, and improve the workflow vice adding to and furthering the previous development model.

Eliminate over-customization of tools at Facilities Engineering Command (FEC) or PWD level.

Standardization is critical to creating any integrated and interoperable workflow management system. The customization of Maximo by each region/FEC has led to different Maximo screens, forms, pick lists, and fields. More importantly, it means training is nearly impossible and unmanageable, which is part of the reason that training is currently not taking place. NAVFAC should determine if any of those customizations are truly useful across the enterprise, but ultimately, remove site-specific field/screen customization in Maximo. In addition, standardization allows for centralized training as well as personnel to move or assist between multiple locations without new training.

Customer Engagement

Shift towards a Customer Experience (CX) priority.

Identifying NAVFAC PWD's customers was not as easy to do as anticipated. This was due to some of the indirect and direct relationships compared between customer-funded projects (and work permits) as well as CNIC versus non-CNIC projects. Even if all "customers" are viewed as recipients of PWD P&S deliverables, then the idea of prioritizing customers becomes a challenge, particularly in the current state of the systems/tools employed at the PWDs. Customer frustrations across all types of PWD services is present and is often left to the FMSs to manage, negotiate, and serve as the primary interface to ensure the customer of status and timelines. But, FMSs can only gain as much insights as the systems/info have to offer, which are tied to one-off, locally managed and stored spreadsheets, absence of master project views, and lack of transparency to the user. But, while transparency to the FMSs and PWD roles is one challenge, there is also a lack of transparency to the customer. A workflow management system can improve efficiencies, queueing, and status tracking, but ultimately, the system needs to also provide insights/tracking to the customer as well (e.g., Domino's pizza tracker example). NAVFAC should implement an organized mechanism for customer transparency into the status of their service tickets and projects. This reduces the burden on FMSs and reliance on phone calls / emails, but as seen in other industries, this is proven to help customer satisfaction even if project timelines are not improved.

Work Induction process should be more standardized.

Currently, work induction board meetings are only inducting one specific type of work (CNIC project work) while integrated priority list projects (from non-CNIC customers) are not reviewed at induction meetings. Two work induction meetings were observed and significant differences between the two work sites were noted. Not only was the Temporary Form - 1 (TF-1) drastically

different at each location, but how the TF-1 was used varied. Both locations did save each TF-1 offline and stored on a shared drive. None of the information was automatically ingested into Maximo or e-Projects or even attached in a record for later retrieval. Since the TF-1 serves as the primary requirement and entry record for CNIC projects, the record (as well as associated attachments, pictures, drawings, etc.) should be the initial record for the Project. Regardless of some of the noted issues with the TF-1 and workflow from work induction, the more important point is that there are too many paths to creating P&S records in e-Projects.

User Awareness of Tools

Broadcast new features about releases (particularly as consolidation and improvements are made).

There are new tools (e.g., Tableau Reader, eCMS) as well as new features/fixes in existing tools that are being released command-wide and to all PWDs. But, in many instances, end users are either not receiving the broadcast of new tools/features or there is a lack of follow-through from top to bottom of the command to ensure acknowledgement and use. Communications from HQ to PWDs are likely dependent on a memo that is not read or received (lost in the middle), or the content of these messages is not clear. NAVFAC should re-evaluate how information about new features and tools are released and understood by the broad user base.

Train Users on Maximo and ieFACMAN.

Training for both Maximo and ieFACMAN is either not taking place, is inconsistent, or is wholly unsatisfactory. While this may not be consistently true across all the FECs, the fact that each FEC has such a customized version of Maximo (in particular) that NAVFAC-wide training on Maximo was stated to be difficult or not possible. Even though there is a MIDLANT process training group that is supposedly responsible for training, the level or consistency of training given on these tools is minimal. Training is a solvable problem. NAVFAC should staff a team to execute this routine training either onsite or stored online for viewing at the user's convenience. ieFACMAN may be more available for universal training, but there is not a single source for training on modules, setting up dashboards, or using the tool overall. Lastly, when systems are intuitive and workflow is transparent (queuing, alerts, tracking, etc.), less training on the systems is needed.

Appendix A - Recent Survey

NAVFAC recently conducted a survey of PWDs regarding the main elements of the overall workflow. While the data was not comprehensive and there were limitations in the survey tool used, there were notable conclusions in the ratings questions and in the open response section. These findings reflect many of the same sentiments and issues uncovered during the DDS Discovery Sprint. The below is a reference summary of notable data from that survey.

Ratings

1. Funding Document Acceptance Process was rated as **"very difficult" by 60%** of the respondents.
2. eCMS was rated as **"very difficult" by 40%** of the respondents.
3. All other ratings were **majority "average"** as opposed to easy or difficult.

Comments

- "One of the biggest issues is **improper work classification** causing poor project development and resulting in cost and schedule growth post-award."
- "**Training timelines** in Maximo, TWMS, etc. need to be evaluated."
- "Projects inducted in the WIB get **lost in a 'black hole'** because there is no prioritization or expectation on when the work should get done. Work is picked from the backlog without any real thought as to the impact it will have on the command."
- "**Too many e-platforms** that we use."
- "The very computers we are required to use to manage workload are slow and insufficient. For example, it took over 15 mins just for this survey to load..."
- "...eTracker and eCMS have **extended funding requests** in some cases by 4-5 months."
- "Too much **time wasted chasing funding documents** and too much time wasted shepherding customers through the funding process."
- "**Just workload management in general**. We don't know our own capacity, throughput."
- "**E-systems create duplicate work**, majority of the time each department (i.e., CI, AM, AQ, FM) create the same project within e-Projects/e-Contracts/e-Tracker and have to continuously chase each other around finding updates. Recommend combining at minimum these three e-Systems..."

Appendix B - Current Journey Map

Throughout the Discovery Sprint, the team documented the steps, paths, systems, and people involved in the current workflow. As an extension of the discovery, the team generated a journey map (i.e., process map as it relates to multiple people/personas interacting with the workflow management process) to serve as a baseline of understanding. While other workflow diagrams existed, none articulated the current state sufficiently for the discussions that took place. As elements of the findings in this report are executed by NAVFAC, the below process map may serve as another data point to begin revising, improving, and consolidating the workflow management.

See the following page for the Journey Map.

NAVFAC - Current Journey Map

Defense Digital Service
October 2019